

Name _____

Date _____

Worksheet A2 : Fundamental Counting Principle, Factorials, Permutations Intro

1. A restaurant offers four sizes of pizza, two types of crust, and eight toppings. How many possible combinations of pizza with one topping are there?
2. How many ways can 5 paintings be line up on a wall?
3. Rob has 4 shirts, 3 pairs of pants, and 2 pairs of shoes that all coordinate. How many outfits can you put together?
4. Grace loves to eat salad! How many salads can she put together if she can pick out one type of lettuce from 2 choices, one vegetable from 4 choices and one dressing from 7 choices?
5. PA license plates have 3 letters followed by 4 numbers.
 - a. If the same letter or number can be repeated, how many can be made?
 - b. If the same letter CANNOT be repeated, how many can be made?
6. How many 5-digit numbers can be formed (using 0 - 9)?
7. How many 5-digit numbers can be formed if each one uses all the digits 0, 1, 2, 3, 4 without repetition?
8. In how many ways can 6 bicycles be parked in a row?

9. Evaluate (show all your work):

a. $6!$

b. $9!$

c. $10!$

10. Rewrite $10!$ with a factor of $8!$ (Hint: $10! = 10 \cdot 9 \cdot 8!$)

11. $\frac{5!}{2!}$

12. $\frac{10!}{8!}$

13. $\frac{25!}{20!}$

14. $\frac{12!}{(12-7)!}$

15. $\frac{12!}{9!3!}$

16. In how many ways can 7 different card be laid out on a table in a row?